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# **Travel Analysis Report For the Fourmile Project**

Chequamegon-Nicolet National Forests



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## CHAPTER 1 SETTING UP THE ANALYSIS

### Background and Purpose

In August 1999, the Washington Office of the U.S. Department of Agriculture (USDA), Forest Service (USFS) published Miscellaneous Report FS-643 *Roads Analysis: Informing Decisions about Managing the National Forest Transportation System*. The objective of roads analysis process (RAP) is to provide decision-makers with critical information to develop road systems that are safe and responsive to public needs and desires, are affordable and efficiently managed, have minimal negative ecological effects on the land, and are in balance with available funding for needed management actions (USDA FS 1999a)

In October 1999, the agency published interim Directive 7710-99-1 authorizing units to use, as appropriate, the roads analysis procedure embodied in FS-643 to help land managers make major road management decisions. On March 3, 2000, the USFS proposed revising 36 CFR part 212 to shift emphasis from transportation development to managing administrative and public access within the capability of the lands.

The proposal was to shift the focus of National Forest System road management from development and construction of new roads to maintaining and restoring needed roads and decommissioning unneeded roads within the context of maintaining, managing, and restoring healthy ecosystems.

On January 12, 2001 the USFS issued the final National Forest System Road Management Rule. This rule revised regulations concerning the management, use, and maintenance of the National Forest transportation system. Consistent with changes in public demands and uses of National Forest resources and the need to better manage funds available for road construction, reconstruction, maintenance, and decommissioning, the final rule removed the emphasis on transportation development and added a requirement for science based transportation analysis. The final rule was intended to help ensure that additions to the National Forest System road network are those deemed essential for resource management and use; that construction, reconstruction, and maintenance of roads minimizes adverse environmental impacts; and that unneeded roads are decommissioned and restoration of ecological processes are initiated.

Although the final roads rule is extensive in providing a comprehensive approach to transportation systems, it does not address the use of off highway vehicles (OHVs). Further complicating matters, policies vary from state to state and between National Forests. In 2005, in response to the need for development of a consistent national policy, the Forest Service published the Travel Management Rule (TMR), a new rule for providing motor vehicle access to National Forests and Grasslands.

The Travel Management Rule (2005) requires each National Forest and Grassland to designate those roads, trails, and areas open to motor vehicle use. Designated routes and areas will be identified on a motor vehicle use map. This rule also renames roads analysis “travel analysis” and streamlines some of the procedural requirements.

## Process

Travel analysis is a six-step process as described in FSH 7709.55, Travel Planning Handbook, Chapter 20. The steps are designed to be sequential with the understanding that the process may require feedback among steps over time as an analysis matures. The amount of time and effort spent on each step differs by project, based on specific situations and available information. The process provides a set of possible issues and analysis questions for which the answers can inform choices about road system management. Decision makers and analysts determine the relevance of each question, incorporating public participation as deemed necessary.

- Step 1. Setting up the Analysis
- Step 2. Describing the Situation
- Step 3. Identifying Issues
- Step 4. Assessing Benefits, Problems and Risks
- Step 5. Describing Opportunities and Setting Priorities
- Step 6. Reporting

## Products

The product of an analysis is a report for decision makers and the public that documents the information and analyses to be used to identify opportunities and set priorities for future Forest system roads. Included in the report is a map displaying the known road system, and the opportunities for each road or road segment being analyzed. This report will:

- Identify desirable roads for public motorized use;
- Identify desirable roads for timber sale access(may not be open to public motorized use);
- Identify road-associated environmental risks;

## This Report

This report documents the travel analysis procedure used for the Fourmile Analysis (wherever analysis area is referenced in this document, it corresponds to National Forest lands within the Forest boundary). This report is a “living” document and reflects the conditions of the analysis area at the time of writing. The document can be updated as the need arises and conditions warrant. This document shall be considered current until subsequent NEPA analysis is conducted for other management proposals.

## Objectives of the Analysis

### Level and Type of Decision-Making the Analysis Will Inform

The purpose of this travel analysis is to provide information concerning roads, and to determine what, if any management decisions will be required in order to add unauthorized roads to the travel system, designate motorized uses different from current approved uses on system roads, and ensure that those decisions be informed by a science-based roads analysis. These decisions are needed to ensure the forest travel system:

- Provides safe access and meets the needs of communities and forest users;
- Facilitates the implementation of the 2004 Chequamegon-Nicolet National Forests (CNNF) Land and Resource Management Plan (Forest Plan);
- Allows for economical and efficient management within likely budget levels;
- Meets current and future resource management objectives;
- Begin to reverse adverse ecological impacts, to the extent practicable.

### Scale and Area of Analysis

This travel analysis is driven by a need to analyze changes and/or additions to the Fourmile Project area. All roads in the project area were reviewed to comply with Travel Management Rule (TMR) Subpart A (36 CFR part 212, subpart A). Opportunities regarding their future use are stated in this report and Appendix A. Maintenance Level (ML) 3-5 roads were addressed in a Forest scale analysis titled “Roads Analysis Chequamegon-Nicolet National Forest (USDA FS 2002a)”. Other agencies, such as townships, having joint or partial road jurisdiction on ML 3-5 roads, will continue to influence motorized uses on those roads. Updated recommendations were made on all ML 1-5 and unauthorized roads during the Fourmile area analysis to comply with the “Chequamegon-Nicolet National Forest Forest Wide Travel Analysis Report (USDA FS 2015)” requiring all roads not covered under previous analysis to be analyzed for risk and benefit and a recommendation of either “Likely Needed” or Likely Not Needed.”

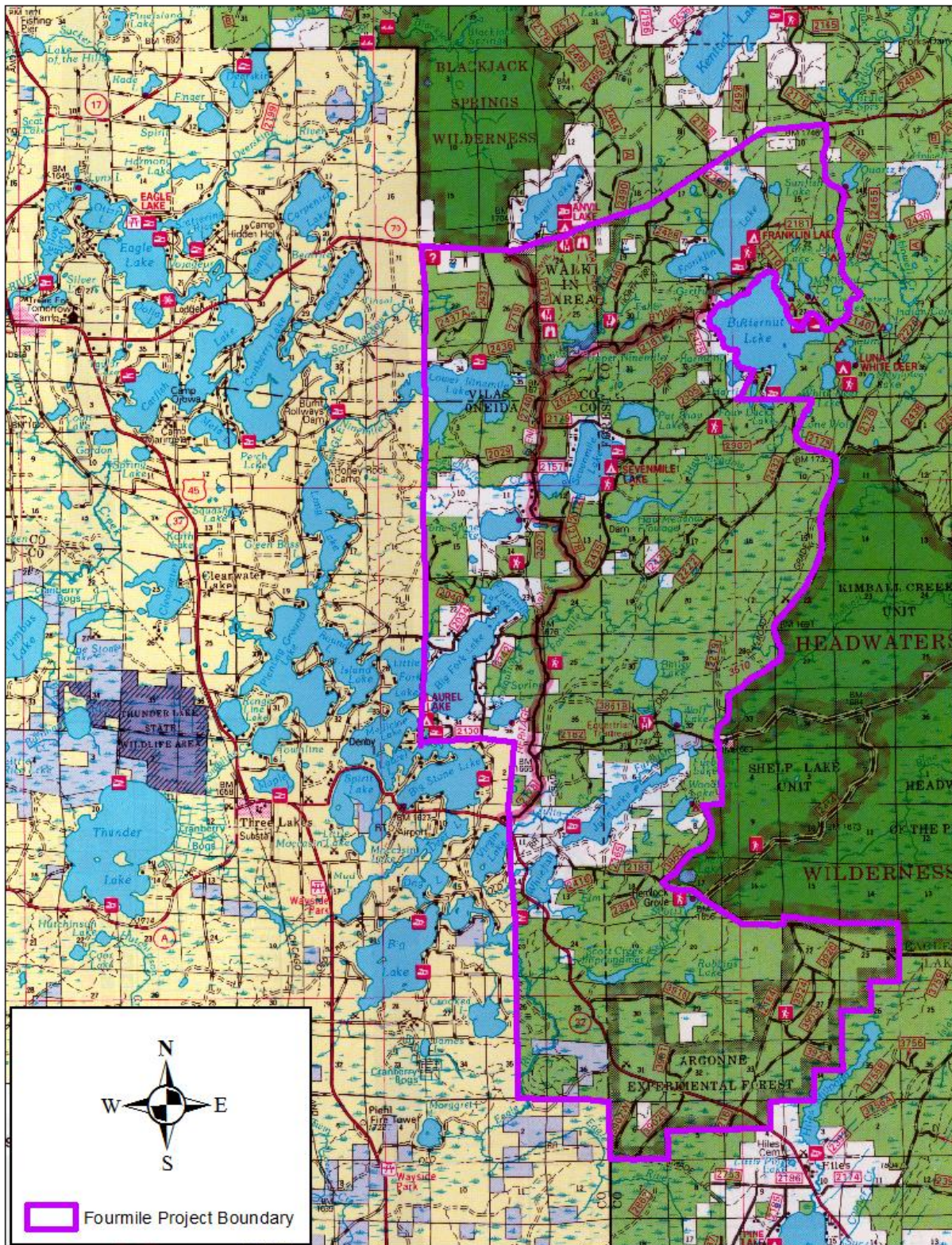


Figure 1-1 Fourmile Project Area

## Interdisciplinary Team Members

### FOURMILE Travel Analysis Team Members

Tim Ketelboeter	Transportation Planner, TA Team Leader
Kate Roskoskey	Civil Engineer
Scott Anderson	Biologist
Justin Bournoville	Ecology/Botany
Dan Reynolds	Timber
Jason Bramstadt	Timber
Adam Felts	Project Team Leader
Kathleen Theisen	Siviculture
Evan Miller	Recreation
Scott Linn	District Fire Management
Sara Sommers	Watershed Specialist
Mark Farina	Soil Scientist
Mike Harnois	GIS Specialist

## Analysis Plan

### Gathering Information

The initial phase of the analysis was to field review the current road system within the project area. This information was then used to update road attribute information in the Project GIS database. This information was used by team members during and after an initial ID team meeting.

### Identifying Major Issues

The first part of this phase was to establish a list of major issues based on discussion and by reviewing past travel analysis. The second part in this phase was to develop issue criteria and assign numeric values to each, relative to value or risk. The ID team then used these numbers to assess each road in the analysis, and develop recommendations for each road.

### Reporting Findings and Making Recommendations

During this phase, information was synthesized to provide an overall assessment of the project area roads and their relevance toward multi-use on the CNNF. Based on the travel analysis findings, a list of recommendations and potential opportunities for travel management was developed.

## Information Used

- The Chequamegon-Nicolet National Forest Land and Resource Management Plan (USDA FS, 2004a) and EIS (USDA FS, 2004b)
- Roads Analysis Chequamegon-Nicolet National Forest (USDA FS, 2002a)
- Motor Vehicle Use Map (2015)
- Travel Management Rule (36 CFR212 and 36 CFR 261)
- Forest Service Handbook 7709.55 – Travel Planning Handbook.
- Corporate GIS data.
- Field review data (GPS data files)

## CHAPTER 2 DESCRIBING THE SITUATION

### The Analysis Area

#### Description of the Project Area and Vicinity

##### *General Description*

The Fourmile analysis area encompasses approximately 55,290 acres of the Eagle River-Florence District of the CNNF. It is located between State Highway 70 and the Town of Hiles, from the western forest boundary heading east to the Headwaters Wilderness. There are a total of approximately 44,078 acres of National Forest system lands within the project area.

##### *History of the Chequamegon-Nicolet National Forests Roads*

The history of Northern Wisconsin around the turn of the century is typical of the events which took place throughout the Lake States. Pine logging opened the country beginning in the mid-1800s. Pine logs were floated to the southern mills on all of the major river systems. The pine era did not greatly influence the development of the road system within the Chequamegon-Nicolet.

The advent of railroad logging around the turn of the twentieth century opened up larger acreages of hardwood lands within the forest. Unlike the low impact winter ice roads, the railroads required cleared and graded roadbeds. Although the roadbeds were abandoned when the cutting was finished, the physical alteration of the ground left behind obvious transportation

corridors. Many of the main lines evolved into town or county roads, or were later reconstructed as part of the primary road system.

The advent of the Civilian Conservation Corps in 1933 provided the means to establish an administrative network that knit the forest into a manageable unit. There were no forest products to move to market so the CCC emphasized on the main arterial roads needed to access large blocks of land. With the major access roads in place, the forest turned its attention to the local roads needed for resource management. During the 70's, two major rail systems connecting the Nicolet with the paper mills of the Fox Valley and Wisconsin River Valley were abandoned making the log sidings and small logging trucks hauling short distances a thing of the past. Larger semi-trailer trucks carrying loads over 150 miles one way to the mills was not uncommon making it necessary to upgrade the narrow woods roads and railroad grades for commercial truck use.

Road work was accomplished as a requirement of the timber sale contract using purchaser credit. This system was opposed by small operators as it required a lot of capital expenditures in the front of the operations. The National Forest Management Act of 1976 provided some relief by allowing small businesses to elect the Forest Service to build any roads exceeding \$20,000. There was still frequent complaints because this tied the sale up for many years before harvesting could take place. In 1978, there was a congressional response to the concerns of timber purchasers and funding was secured for the Nicolet and Chequamegon to begin the pre-roading program. This allowed the Forest Service to build roads to access proposed timber sales in advance of the sale. This caused an acceleration of road building in an effort to get out ahead of the planned timber sales. This program has provided a large portion of the local road system that the forest continues to use. Most of these roads have seen little maintenance since the completion of the timber sale activities and will need heavy maintenance to allow safe hauling during future timber sales. In other areas, direction may be to winter log due to resource conditions, so these roads may be downgraded, which may make it necessary to close roads to public use because of the poor road surfacing.

On November 9, 2005, the Forest Service published the travel management rule, governing use of motor vehicles on NFS lands. the travel management rule (36 CFR part 212, subpart B) requires each administrative unit or ranger district to designate those NFS roads, NFS trails, and areas on NFS lands that are open to motor vehicle use by vehicle class and, if appropriate, by time of year. The travel management rule also requires designated roads, trails, and areas to be identified on a motor vehicle use map (MVUM). After designated roads, trails, and areas have been identified on an MVUM, motor vehicle use inconsistent with those designations is prohibited under 36 CFR 261.13. The first MVUM was produced on the CNNF in January of 2009.

The final directives consolidate direction for travel planning for both NFS roads and NFS trails in Forest Service Manual (FSM) 7710 and Forest Service Handbook (FSH) 7709.55. The final directives rename roads analysis "travel analysis" and streamline some of its procedural requirements.

The Fourmile travel analysis will review all local roads (ML 1-5) within the Fourmile project area including all unauthorized roads. Unauthorized roads are roads that are not on the National

Forest System; they may be user developed roads, or other roads that were built during past timber sales and were improperly closed. The travel analysis will determine if these roads will be added to the system and used for timber sale access, some may be added to the Motor Vehicle Use Map, which allows open public motorized use, and others will be designated for decommissioning. As stated before, the CNNF has completed a forest scale analysis on the maintenance level 3-5 roads titled “Roads Analysis Chequamegon-Nicolet National Forest (USDA FS 2002a).” In addition, the CNNF is required under TMR subpart A to analyze all roads not covered under previous analysis and to make updated recommendations of previously analyzed roads of either “Likely Needed” or “Likely Not Needed” (USDA FS 2015). Maintenance Levels is a description of the amount of maintenance a road is to receive, and a measure of user comfort. The higher the level the more user comfort should be. The ML 3-5 roads are the backbone of the road network. Most of these roads are maintained by the local townships through cooperative agreements with the Forest Service, to provide open public use to highway legal vehicles. ML 1 roads are closed to all use and may be opened temporarily for management activities under a NEPA decision. ML 2 roads are open to public or administrative use but require a high clearance four-wheel drive vehicle and may have seasonal restrictions.

In addition to national objectives, road related objectives specific to the Chequamegon-Nicolet National Forests 2004 Land and Resource Management Plan (USFS, 2004a) include:

### ***Goal 3.1 – Capital Infrastructure***

Built and maintain safe, efficient and effective infrastructure that supports public and administrative uses of National Forest System lands. Retain and progress toward the Forestwide average total road density goal of 3.0 miles per square mile established in 1986. (USDA FS 1986a).

Objective 3.1 – Reduce average open and total road density on the Chequamegon-Nicolet National Forests. Use Appendix BB “Guide for Reducing Open and Total Road Density” and Road Density Map in Map Packet to focus efforts (USFS, 2004a).

The Chequamegon-Nicolet National Forests Final Environmental Impact Statement (FEIS), Chapter 3-244 defines and measures road density in two ways: total road density and open road density. Total road density “describes the total miles of all types of roads – including those under the jurisdiction of Local, State, or Federal authorities-per square mile of national forest land”. In addition, the FEIS defines “upper limits” which represents the maximum total road density allowed in a specific area based on Recreation Opportunity Spectrum (ROS) designations. Open road density describes the miles of Forest Service roads open to public use, per square mile of National Forest land. Open road density also has “upper limits” assigned based on ROS designations.

The ROS designations for the Fourmile area are Roaded Natural, Roaded Natural Remote, and Semi-Primitive Non-Motorized (SPNM). Table 2.1 shows the existing road density for the Fourmile project.

**Table 2.1 - Existing Condition for the Fourmile Project Area (67.34 square miles)**

Grouped Forest Plan Road Densities	Existing Density	Area (square miles)	Existing Mileage	Forest Plan Mileage*	Maximum increase or minimum decrease to meet desired Forest Plan Mileage (miles)
open road density of 0.0 miles/square mile (SPNM)	1.87	3.29	6.16	0.00	-6.16
total road density of 0.0 miles/square mile (SPNM)	9.04	3.29	29.78	0.00	-29.78
open road density of up to 2.0 miles/square mile	1.45	36.02	52.28	72.04	+19.76
total road density of 3.0 miles/square mile	5.57	36.02	200.67	108.06	-92.61
open road density of up to 4.0 miles/square mile	2.10	28.05	58.92	112.2	+53.28
total road density of 4.0 miles/square mile	5.40	28.05	151.44	112.2	-39.24

\*Plan Mileage = Plan Density x Area

## CHAPTER 3 IDENTIFYING ISSUES

The ID team developed a list of preliminary issues based on team discussion, past roads analysis, and answers to the questions in Chapter 4. Evaluation of the standard questions in Chapter 4 identifies the effect each issue has on different resources and the opportunities or guidelines to address these issues. Chapter 5 uses information from Chapter 4 to explain the issue and summarizes opportunities by issue. Major issues identified are listed below.

### Administrative Access

This issue examines the road system level of use for USDA Forest Service administrative needs; including access to general administrative sites; rock sources; heritage sites; radio repeater sites; weather stations; and areas of the forest affected by ecosystem management and fire management activities.

### Public Access

This issue examines the usage of the road system by the general public for activities such as recreation and harvesting forest products. Road segments are rated on the type of activities the segment supports; including dispersed or developed recreation (campgrounds, trailheads,

viewing areas), traditional forest activities (woodcutting, forest products gathering), and civil and municipal activities (postal routes and school bus routes).

### **Private Access**

This issue examines the usage of the road system by private interest, including landowners; power lines; rock sources; communication sites; and other special use permit sites.

The USDA Forest Service is legally obligated by the Alaska National Interest Lands Conservation Act of 1980 (ANILCA; P.L. 96-487, 94 Stat. 2371) to provide access to private landowners if their land is surrounded by Federal land and no other access options exist.

Specifically, this legislation mandates:

“The Secretary (of Agriculture) shall provide such access to non-Federally owned land within the boundaries of the National Forest System as the Secretary deems adequate to secure to the owner the reasonable use and enjoyment thereof: provided, that such owner comply with rules and regulations applicable to ingress and egress to or from the National Forest System” (ANILCA; 16 U.S.C. 3210 Section 1323 (a)). 35

### **Motorized Impacts (Soils)**

Motorized impacts were identified as a key issue due to the amount of active motorized use within the analysis area. Roads built from native soil will be evaluated on the potential for resource damage based on soil types in the area.

### **Management Areas (MA's) 8E, 8F, and 8G**

Roads that bound or cross MA's 8E, 8F, and 8G were identified so that specific forest plan standards and guidelines can be implemented.

### **Plant and Wildlife Concerns**

By providing access to remote areas, roads can increase the amount of human disturbance to wildlife and plant species that are sensitive to human presence. This is generally more of a concern with rare or sensitive species (such as northern goshawks), but may also include more common species, such as bobcats. In evaluating this issue, the interdisciplinary team identified areas where sensitive plant and animal species were present and ranked those areas with higher levels of concern.

### **Invasive Species**

Roads can facilitate the movement of invasive plants. Many invasive species gain a foothold along roadsides, and then move into undisturbed areas. These invasive plants may disrupt ecosystem function and displace native plants and animals. There are many potential effects of these species on ecosystem function including reductions of native biodiversity, suitable nesting habitat for songbirds, and suitable food sources for many species including butterflies and mammals. In evaluating this issue, the interdisciplinary team identified primary open travel routes in close proximity to invasive species and ranked them with high levels of concern. Secondary open travel routes in proximity to invasive species were ranked with moderate levels of concern. Other lesser-used or closed travel routes were given a lower ranking.

### **Aquatic Concerns**

Roads have the potential to impact aquatic resources and habitats by acting as sources for increased runoff and sedimentation. This is largely a function of road design, location, maintenance, and vegetative and physical conditions in the proximity of the road/wetland. In evaluating this issue, the interdisciplinary team identified areas where existing roads are in close proximity to wetland areas and ranked those areas with higher levels of concern. Other known problem areas were also identified, added to the priority list, and ranked accordingly.

### **Heritage**

Roads have a potential to impact cultural resources by allowing access to sites or by directly impacting the site from rutting or other resource damage. In evaluating this issue, the interdisciplinary team identified areas where existing roads are in close proximity to sites and ranked those areas with higher levels of concern.

## **CHAPTER 4 ASSESSING BENEFITS, PROBLEMS, AND RISKS**

### **Introduction**

Chapter 4 contains narrative answers to the questions contained in FS-643, *Roads Analysis: Informing Decisions about Managing the National Forest Transportation System*. These questions and answers provide an assessment of the ecological, social, and economic considerations of the current analysis area transportation system.

### **Ecosystem Functions and Processes (EF)**

**EF(1): What ecological attributes, particularly those unique to the region, would be affected by roading of current unroaded areas?**

There are no designated unroaded areas in the project area; therefore, an unroaded analysis is not applicable. A portion of the project area is designated Semi-Primitive Non-Motorized, however, no vegetation management will be occurring in this area.

**EF(2): To what degree do the presence, type, and location of roads increase the introduction and spread of exotic plant and animal species, insects, diseases, and parasites? What are the potential effects of such introductions to plant and animal species and ecosystem function in the area?**

Studies have shown that roads allow exotic species into areas where they haven't been historically or where appropriate habitat was not available (Buckley et al., 2003) (Parendes and Jones, 2000). Any area of exposed mineral soil, (road construction, skid trails, scarified areas, and log landing sites) facilitates the introduction and spread of invasive plants. In their respective habitats, invasive species can out-compete native species for resources, consequently changing plant composition. This causes cascading effects to habitat composition, biodiversity, structure, and function, usually to the detriment of native species. Potential effects on ecosystem function include loss of: native biodiversity, suitable nesting habitat for songbirds, and suitable

food sources for many species including butterflies and mammals. Invasive species known or likely to occur in the area include spotted knapweed, leafy spurge, swamp thistle, bull thistle, Canada thistle, garlic mustard, buckthorn, honeysuckle, and reed canarygrass. Maintaining a current inventory of invasive species infestations, treating large seed source infestations, and immediately treating new infestations would minimize the effect of these invasive species. Road obliteration and re-vegetation of disturbed areas with locally collected native seed would also help prevent the spread of invasive species. In addition, all roads should be scrutinized to determine future need since all open roads have the potential to help move these exotic species.

Introduced insects and diseases, such as oak wilt or gypsy moth, can affect the availability of native trees for denning and forage needs of wildlife. Gypsy moth has a habit of pupating and laying eggs on recreational vehicles, cars, trucks, firewood, outdoor furniture, etc. Humans moving these objects from one location to another increase the likelihood of introduction to a new location. In addition, some forest insects are secondary agents; they respond to stress created by a primary agent, such as damage from road construction. For example, the hemlock borer can kill hemlock trees that have been damaged by road construction or re-construction. Other secondary damage agents include sapstreak disease (in sugar maple) and oak wilt (which is carried by sap feeding beetles which are attracted to fresh wounds on oak).

Roads can also facilitate the introduction of non-native earthworm species, since cocoons are often transported by tire treads. Forests invaded by these species gradually lose their duff and organic soil layers. These can have a serious impact on many forest organisms, including a dramatic loss of the herbaceous plants (Gundale, 2002).

**EF(3): To what degree do the presence, type, and location of roads contribute to the control of insects, diseases, and parasites?**

Road access can facilitate the control of forest insects, diseases, and parasites. Whether the type of control is direct (burning infected slash) or indirect (using forest management to reduce insects or disease), roads systems facilitate control measures by allowing crew and equipment easy access. For example, overmature, overstocked, or unmanaged oak stands are most likely to suffer heavy mortality following the defoliation from gypsy moth. In turn, forest management in some of these stands may minimize the effect of this insect infestation.

**EF(4): How does the road system affect ecological disturbance regimes in the area?** Trees located along roads are often more susceptible to blowdown than in other areas, as the road corridor can act as a funnel for winds. Wind is the primary natural disturbance agent in this area. Most fires that occur are human caused but they are limited in frequency and extent. The road system helps facilitate rapid response for fire suppression activities and provide firebreaks, thus their general effect is to reduce the extent and intensity of wildfires.

**EF(5): What are the adverse effects of noise caused by developing, using, and maintaining roads?**

Noise caused by developing, using, and maintaining roads can disrupt wildlife breeding and foraging activities (Forman and Alexander, 1998) (Forman and Deblinger, 2000) (Saunders et al., 2002) (Trombulak and Frissell, 2000). Wildlife species vary in their sensitivity to noise associated with roads. Some species, such as eagles, goshawks and other raptors, are more

susceptible to such noise during the nesting season, while hunted species, such as deer and waterfowl, may be most sensitive during and after hunting seasons. Such disturbances can create a corridor of low value, or low use habitat along roads. The width of the corridor will vary with the noise buffering properties of the adjacent vegetation.

The majority of traffic is from private vehicles using the road system for recreational pursuits. Heavy truck traffic is minimal when compared to other traffic and occurs only in conjunction with vegetation management and road maintenance activities.

Like many plant and animal species, human experiences that depend on solitude, silence, and beauty are increasingly threatened by expanding development, resource utilization, and crowding (Gucinski et al., 2001). Developing, using, and maintaining roads have the potential to detract from a quiet outdoors experience.

## **Aquatic, Riparian Zone, and Water Quality (AQ)**

### **AQ(1): How and where does the road system modify the surface and subsurface hydrology of the area?**

Roads and trails located within the floodplains of streams can prevent floodwater from being able to spread out and dissipate energy during peak flows. The 27 known stream crossings within the project area are perpendicular to the stream which minimizes fill within the floodplain and effects on flood peaks.

Roads located between hillsides and streams can intercept surface flow from the hillside to the stream as well as subsurface flow through seeps and above a restrictive layer such as bedrock or fragipans. Because of gentle, undulating terrain in the project area, there are very few road cuts in hillsides.

Roads located through wetlands can restrict the lateral subsurface flow of water within the upper organic horizons if there is inadequate cross-drainage. There are 6.5 miles of roads crossing wetlands within the project area. Most of these are short small segments less than 0.1 miles on various roads. The longest wetland crossing is 0.3 miles located on FDR617328, which is an unauthorized road.

### **AQ(2): How and where does the road system generate surface erosion?**

Surface erosion occurs on unpaved roads and trails where water runs down the road surface, rather than off to the side. The steeper and longer the slope of the road, the greater the erosion. Such roads often are no longer crowned, out-sloped, or in-sloped. Surface erosion is also generated from roads with ineffective ditches; roads that have been improperly graded, especially those with berms between the road edge and ditch; roads lacking diversion outlets; roads lacking gravel surfacing; and roads lacking cross-drain culverts. Surface erosion also occurs on road embankments and from water over-topping the road at stream and wetland road crossings. Road surface erosion is not a substantial problem within much of the Southeast analysis area because most roads and trails have gentle, short slopes; the main roads are paved or have a gravel surface with a crown; and many smaller roads have limited access.

**AQ(3): How and where does the road system affect mass wasting?**

Road-related mass-wasting typically occurs in steep terrain or mountainous topography. The topography throughout the CNNF is relatively flat or rolling terrain with some short steep slopes. Only 0.5 percent of the area within the CNNF boundary has slopes that exceed 30 percent. Therefore, road-related mass wasting is not a significant issue and generally not a problem on the CNNF.

**AQ(4): How and where do road-stream crossings influence local stream channels and water quality?**

Road-stream crossings generally influence local stream channels and water quality in three ways. One, surface erosion from road surfaces and ditches can be a chronic source of sediment to the downstream channel. Second, culverts set too high can cause upstream ponding which results in upstream channel siltation and aggradation. Third, crossings that wash out frequently as a result of undersized culverts degrade water quality and stream morphology through the input of sediment in the stream channels. Often the stream bed elevation is altered from sediment deposits downstream creating dams that cause finer sediments to settle out in the channel upstream of the crossing. The results can include channel aggradation, braiding, wider and shallower channels, a rise in water temperature, death of vegetation upstream, loss of spawning habitat, fish passage obstructions, damming by beaver, etc.

**AQ(5): How and where does the road system create potential for pollutants, such as chemical spills, oils, de-icing salts, or herbicides, to enter surface waters?**

Motorized vehicles that use the road system require oil to operate. If a puncture would occur in the container that stores the chemical or oil product, the potential exists for it to leak onto the roadway, nearby ground surface and the nearby surface waters. Salt is occasionally used in combination with sand on township roads in winter. State Highway 70 and Highway 32 are the primary routes that are salted during the winter months. No known water quality problems have occurred as a result of this use of de-icing salts in the analysis area. Road and dust abatement liquors are used very infrequently and are unlikely to cause any water quality problems.

**AQ(6): How and where is the road system “hydrologically connected” to the stream system? How do the connections affect water quality and quantity (such as, the delivery of sediments and chemicals, thermal increases, elevated peak flows)?**

The road system is hydrologically connected to streams, however, because of the gentle, undulating terrain, these connections are rarely more than 100-200 feet and sometimes are less. This amounts to less than one percent of the road system and is unlikely to have a substantial effect on water quality or quantity.

**AQ(7): What downstream beneficial uses of water exist in the area? What changes in uses and demand are expected over time? How are they affected or put at risk by road-derived pollutants?**

Designated downstream beneficial uses of water in the analysis area include: warmwater sportfish, warmwater forage fish, and coldwater sportfish. The analysis area does not contain a designated municipal water supply watershed. Fish and other aquatic life are the water uses that are most likely to be affected by road-derived pollutants. Sediment can decrease habitat quality

and spawning success for fish species and alter the habitat for aquatic invertebrates, particularly ephemeroptera, plecoptera, and tricoptera. No changes in water uses and demands are expected over time. Due to the limited impact of the existing road and trail system to stream sedimentation, the risks to downstream beneficial uses of water are considered minimal.

**AQ(8): How and where does the road system affect wetlands?**

The lateral flow of water through the upper organic horizons of wetland bogs can be affected by roads constructed through such wetlands, if adequate cross-drainage isn't provided. The result is often a loss of one wetland community type and conversion to another. In addition, heavy sedimentation or direct filling of the wetland can alter wetlands.

**AQ(9): How does the road system alter physical channel dynamics, including isolation of floodplains: constraints on channel migration; and the movement of large wood, fine organic matter, and sediment?**

Roads that cut across floodplains perpendicular to the stream can affect the transport of debris that moves through the channel and floodplain during flood flows. There are no known areas where the road system is altering channels or the movement of organic material.

**AQ(10): How and where does the road system restrict the migration and movement of aquatic organisms? What aquatic species are affected and to what extent?**

The road-stream crossings in the analysis area were inventoried to determine if fish passage was restricted. Four sites were identified that may have fish passage issues. They include an unnamed tributary to Butternut Lake at FR 2181, an unnamed intermittent stream at FR 2785, an unnamed tributary to Scott Creek at FR 2183, and Scott Creek at FDR 616277.

**AQ(11): How does the road system affect shading, litterfall, and riparian plant communities?**

Roads in riparian areas result in permanent removal of riparian vegetation. Roads that parallel streams or lakes for long distances are more likely to affect aquatic ecology than those that cross at right angles. The road system has a minimal effect on shading, litterfall, and riparian plant communities in most cases because no roads run parallel and in close proximity to streams.

**AQ(12): How and where does the road system contribute to fishing, poaching, or direct habitat loss for at-risk aquatic species?**

Any road that provides access to a lake or stream potentially contributes to fishing, poaching, and direct habitat loss. The easier it is to access a fishing area, the greater the potential for impacts to at risk aquatic species. Road segments within the riparian area of a lake or a stream also provide easier access. The Management Indicator Species (MIS) brook trout is also found within the project area. Fishing, poaching and direct habitat loss isn't known to be a problem within the area for any species.

**AQ(13): How and where does the road facilitate the introduction of non-native aquatic species?**

Roads into lakes and along streams help provide easier access. Easier access generally means more people will use the area. For lakes with roads connected to boat landings, there is higher probability of invasion by nonnative aquatic plants and animals such as purple loosestrife,

Eurasian Milfoil, and zebra mussel. Many of these species are transferred on boats/trailers traveling between lakes. Again, higher access means higher potential for angler use, which means increase probability that nonnative fish species (particularly minnows) and nondesired native species could be introduced into a lake or stream by anglers dumping minnow buckets and/or transferring fish.

**AQ(14): To what extent does the road system overlap with areas of exceptionally high aquatic diversity or productivity, or areas containing rare or unique aquatic species or species of interest?**

There are no areas of exceptionally high aquatic diversity or productivity within the project area.

**Terrestrial Wildlife (TW)**

**TW (1): What are the direct affects of the road system on terrestrial species habitat?**

Road construction and maintenance can have direct impacts on terrestrial species habitat by removing mature vegetation that may cause fragmentation within interior forest (canopy) habitat. Fragmentation results when a large and contiguous ecosystem is converted to a network of small patches isolated from each other by interstitial areas of a different ecosystem type. In general, a more fragmented landscape will have a smaller average patch size. Some road development can negatively impact certain species that utilize more contiguous forest and benefit edge-adapted species of wildlife, and this could negatively impact those species that prefer “interior” forest conditions. Edge represents the places where two distinctly different habitats meet.

Fragmentation and edge can be either a naturally occurring landscape feature or it can result from human activities. Some examples of naturally occurring fragmentation might be located where a marsh meets a forested area or where a windstorm results in an opening within a forested area. Examples of human-caused fragmentation might be the clearing of a forested area for agriculture or the creation of temporary openings for even-aged regeneration harvests. Given the great variability of habitat requirements and preferences, fragmentation and edge effects clearly benefit some species, are neutral to other species, and are detrimental to some species.

Roads are a feature often thought to contribute to fragmentation of the landscape. Roads can contribute to fragmentation in a variety of ways, ranging from the alteration of the hydrologic regime due to the roadbed, to the maintenance of an open canopy along the road corridor. Additionally roads can act as barriers to migration of some species of small mammals, reptiles, and amphibians. However, they can also attract animals for a variety of reasons: birds use roadside gravel to aid their digestion of seeds and to dust (using sand to clean mites from feather), herbivores use the dense vegetation of roadside edges for food, reptiles and amphibians utilize them for basking purposes and to lay eggs in roadside gravel, butterflies and many large mammals such as deer, wolves, and bears find roads to be efficient travel ways. Such use involves mortality risks associated with vehicle collisions, hunting, poaching, and natural predators. When road kills become common, scavengers such as crows, ravens, coyotes, and raccoons increase their use of roads and can then also affect prey and host species populations. Where road densities are high, the mortality risks can cause some species to avoid the road corridor and large areas of adjacent habitat. Wide road corridors can increase the amount of sun and wind exposure sufficiently to change the microclimate of adjacent forest areas. Roadside openings may provide habitat for some species; however, use of those openings involves

mortality risks associated with vehicle collisions. Another beneficial use of roads is access to maintain some wildlife habitat such as impoundments and openings.

Areas of concern for the road system affecting terrestrial habitat include establishing new roads in the large blocks of upland hardwood habitat. This area has historic and current use by large woodland raptors and neotropical migrant birds that can be negatively affected by fragmentation. Also, the road system in this area is utilized for tractor access to the wildlife openings and trail systems that are maintained through mowing and/or prescribed burning.

**TW (2): How does the road system facilitate human activities that affect habitat?** Roads facilitate user access to the Forest, thus increasing the amount and frequency of visitation than would occur if the roads were not present. Many users can affect wildlife habitat through their use of the Forest such as firewood cutting, bough cutting, berry picking, and other various forest products collection. Minimal impact to wildlife habitat can occur when these activities are conducted under guidelines established by the Forest Service and with consideration to the resources. However, disregard to habitat or excessive use can cause trampling, removal or altering the vegetation through direct (cutting down a snag with a nest) and indirect (disturbance) impacts. Campsites use at dispersed areas can have a large but localized impact with higher levels of disturbance and changes in vegetation immediate to the site. Roads also provide access for silvicultural and wildlife management activities and fire suppression actions. Depending on the species considered, these activities could have a positive or negative effect on the habitat characteristics of the stand.

**TW (3): How does the road system affect legal and illegal human activities (including trapping, hunting, poaching, harassment, road kill, or illegal kill levels)? What are the affects on wildlife species?** Roads provide access for several legal activities such as hunting, trapping, fishing, snowmobiling, skiing, and hiking. They also can increase the likelihood of illegal activities such as poaching and illegal collecting of wildlife species. The Nicolet National Forest does not allow ATV travel on forest roads unless it is on designated trail and presently there are no established trails in this area. Due to this some illegal ATV travel could occur on and off roads that can cause resource damage. Vehicle use on roads can cause the increased disturbance of species with the potential to adversely affect movements, social behavior, reproduction, as well as the potential to directly kill species through vehicle collisions. Closing roads can help lessen the degree of adverse impacts to animals, especially those more sensitive TES species. Roads also facilitate access to streams, lakes and ponds, which could increase the possibility of illegal fishing, hunting, mammal and minnow trapping, and unauthorized fish stocking. These activities can affect population levels of various riparian and aquatic wildlife species and associated communities by direct removal of animals, disruption of foraging or breeding habitat, or altering habitat characteristics.

Road access does provide benefits by providing access for hunting and trapping that help control and maintain animal population levels like bear, white-tailed deer, and wild turkey.

**TW (4): How does the road system directly affect unique communities or special features in the area?**

There are a number of areas within the Fourmile project that have been identified as special or unique due to the quality of their natural communities. These areas are managed as Research Natural Areas (RNAs), Special Management Areas (SMAs), and Old Growth & Natural Feature Complexes (MA 8E, 8F, and 8G, respectively). Collectively, they are all referred to as Ecological Reference Areas (ERAs). This reflects that although these management areas vary somewhat in terms of management and objectives, they have many areas of overlap, including the common goals of providing ecological reference or benchmark conditions for baseline monitoring and research, refugia for rare species, and some ecological conditions or functions that are not otherwise available across the landscape. In these roles, Ecological Reference Areas contribute to biological diversity, an element of ecosystem sustainability. Also included under this reference area umbrella are a smaller number of geological and archeological special management areas that provide cultural and geological reference conditions.

If the rules associated with these MA are followed by users, the impact to them will be minimal. However, they can be directly impacted by new road systems through fragmentation of habitat. Wider roads corridors can increase the amount of sun and wind sufficiently to change the microhabitat of adjacent forest areas. Use of roads by vehicles (especially ATV's) can spread invasive non-native plants species, potentially a major impact to natural communities. Non-native earth worms, which have already impacted much of the CNNF, can be spread through mud on vehicles tires, as well as disposal of fishing bait.

## **Economics (EC)**

**EC(1): How does the road system affect the agency's direct costs and revenues? What, if any, changes in the road system will increase net revenue to the agency by reducing cost, increasing revenue, or both?**

Funding to maintain any Forest Service system road has substantially declined over the past ten years. It is no longer possible to maintain the existing road system to the maintenance levels expected by the public. This results in a road system that is not environmentally sound or provides an unsafe environment for the user. This lack of funding has allowed many maintenance level 3 roads to become level 2 and level 2 to become level 1. By doing this the Forest is losing some roads but can still provide for a safer experience for users. An approach to reduce road maintenance costs while increasing revenue would be to continue management of a suitable timber base that currently has road access. Timber purchasers are often required to perform road and trail maintenance on the roads and recreation trails used. Additional dollars received from any of these funding sources would provide better maintenance for these roads.

The road system allows access for the number and amount of activities that occur in the area. Without the road system, the benefits and costs associated with hunters, sightseers, firewood cutters, and others would be reduced.

The current road system provides both positive and negative cash flows. Major sources of revenue associated with roads are timber sales, campgrounds and parking fees. Direct costs include road maintenance and resource restoration, or protection costs related to increased motorized use in roaded areas. At present, direct costs exceed direct revenues. Given current agency funding and sources of revenue, an increase in open road mileage will compound the

negative cash flow. However, future costs can be mitigated or minimized if roads are properly constructed.

Although the direct costs of road construction, maintenance, and mitigation measures exceed the direct revenues resulting from timber and other commodities, many other resource management objectives could not be accomplished or would cost more without an adequate road system.

**EC(2): How does the road system affect the priced and non-priced consequences included in economic efficiency analysis used to assess net benefits to society?**

The road user groups that contribute the most significant recreation-related economic benefits are tourism (including camping and water sports, fishing, hunting, skiing, cross country skiing, snow shoeing, snowmobiling, and ATV riding). These users contribute revenue through purchase of equipment, supplies, and services for their activities. Non-local recreationists contribute additional revenue by utilizing local lodging, restaurants, stores, and services.

Construction, maintenance, or any change in maintenance levels of roads within the analysis area is not expected to have a significant long-term impact on the economic benefits derived from recreation unless there is a significant reduction in the total mileage of roads available for recreational use. Some displacement of individual users may occur as a result of some road designations. This has been taken into consideration and will be addressed in the final implementation.

**EC(3): How does the road system affect the distribution of benefits and costs among affected people?**

The road system offers greater benefits to people who use vehicles for travel to and within the CNNF than to visitors who travel on foot or by other non-motorized means. For those who choose non-motorized forms of transportation, the road system may cost more in terms of lost aesthetic values, noise pollution, and other potential conflicts with motorized vehicles.

## **Timber Management (TM)**

**TM(1): How does road spacing and location affect logging system feasibility?** All timber sales on the Chequamegon-Nicolet National Forest are harvested with ground-based systems using rubber tired or track mounted equipment. Road location and spacing have a direct effect on the cost to harvest and skid wood to a landing. In general, a close road spacing results in less time needed for skidding (and, therefore, higher production rates). This will almost always result in an increase in stumpage value. However, close road spacing increases total road costs (construction and maintenance), decreasing stumpage value. Logging engineering studies have shown that the most efficient road spacing that optimizes timber stumpage values is where the maximum skidding distance is about a quarter ( $\frac{1}{4}$ ) mile. Guidelines in the forest plan recommend a  $\frac{1}{4}$  mile skidding distance in most cases (p. 2-38). This efficient road spacing is not always possible because of land feature limitations such as steep slopes or wetland or because of conflicts with other resource management objectives. Road construction and maintenance costs can be reduced to some extent and in some situations through the use of approved temporary roads. These would be only in areas with non-recurrent access needs (greater than 20 year entry intervals) such as clearcuts and other final harvests.

Generally, road construction or reconstruction is only done where it is determined to be necessary to accomplish approved resource management activities and meet public access needs. This road work is to be done to the minimum standard necessary to meet management objectives and public needs.

Road location is also an important consideration. The Fourmile Area is characterized by upland forest conditions interspersed with large complexes lowland conifer and lowland hardwood stands. Most lowland forested stands pose no real concern for the road system in the area because the roads can simply stay far enough away from them. The Fourmile Area also contains some lakes. These lakes already have developed access around them for public and private use. The rivers and streams are occasionally crossed by arterial and collector roads.

A permanent road system generally must be in the upland in order to provide logging access and to minimize any possible impacts on adjacent wetland and streams. Wetland/stream crossings in the area with the permanent local road system are not normally necessary if all uplands are to be accessible to logging. On occasions, a temporary winter-only road may be needed to access a wetland with a harvest treatment or to cross a wetland to access an isolated small area of upland. However, in most cases it is more cost effective and better environmentally to build and maintain extra miles of road on upland in order to avoid crossing wetland and streams. Any area, which can only be accessed in the winter by freezing down a winter road, will generally reduce timber stumpage values.

During the 1920's and 30's, most of the upland forested area in the Fourmile Area was clearcut. In order to move the harvested wood to mills for processing, truck roads were established. These access routes are visible on the 1938 photos. Many of them are still present and used today for access into the forest for a variety of uses. Through time some additional access routes have been established. As a result there are parts of the area that contain more roads than are necessary to meet the 1/4 mile skid distance. There is an occasional area where there is not enough access to meet the 1/4 mile skid distance. Roads not needed for timber hauling or other access reasons are recommended for decommissioning. Very few areas do not have enough access to manage the timber resource.

Many roads have been degraded over the years, mostly from general public use and, to a lesser extent, from past timber hauling. These roads need reconstruction to reshape the surface and restore proper drainage to make them useable again for timber hauling. The amount of reconstruction will vary from repairing a few wet potholes to reshaping the entire road surface, replacing drainage pipes and relocating short portions of a road to fix a safety problem.

There are snowmobile trails in areas of the Fourmile Area. Almost all of these trails are on local roads used for timber management purposes. In almost all cases, these road/trail locations have been and are proposed to continue to be dual-used as a road and a trail. To reduce conflict with the snowmobile trail use, some harvesting can be restricted to the snow-free season or the trail can be temporarily relocated where no harvesting is proposed. However, changing the operating season to the snow-free season should only occur where the soil will not be impacted. There are times where snowmobiling and timber hauling will happen concurrently. In those cases, no hauling would be allowed from noon on Friday until Monday morning, or between the Christmas and New Year holiday season.

**TM(2): How does the road system affect managing the suitable timber base and other land?** Road systems provide for faster and less expensive access to national forest land for multi-

resource inventory data collection, fire suppression, sale preparation work, sale administration, slash disposal, and reforestation efforts as well as for logging access.

Because of the relatively flat terrain on the Chequamegon-Nicolet National Forest, the most economical and feasible way to remove forest products is through a ground-based system. These systems require a road network to move the wood products from the landings to the mills. The road network consists of arterial, collector, and local roads. The current arterial and collector road system is adequate in the Fourmile Area.

Overall, there are enough local roads on the system (those which are normally dead end or are single resource oriented roads) to accomplish the forest plan management objectives and initial proposed actions in the area. Adequate access provides an economical skidding distance (maximum of one quarter mile), which requires a minimum road system, plus temporary and winter roads. Any road that will be needed again in less than 20 years should be on the National Forest road system. A road that will not be needed for 20 years or more should be a temporary road. Therefore, some additional classified and temporary road construction will be needed.

**TM(3): How does the road system affect access to timber stands needing silvicultural treatment?** Most of our silvicultural treatments use timber sales as the means of accomplishing the necessary work, thereby creating wood products. Roads (arterial, collector, and local) are all necessary for the removal of the wood products. Without roads, most silvicultural treatments would not take place. Road (local roads primarily) specifications vary according to the silvicultural treatment and the frequency of entry and season of harvest.

Thinning of overstocked immature conifer stands (primarily red pine, white pine, and white spruce) is normally done on a 7-15 year entry cycle usually starting at 25 to 40 years. Since an access road will be needed every 7-15 years, that road should be part of the inventoried forest road system and maintained on a schedule consistent with its planned use.

Northern hardwood is slower growing than red pine, white pine, and white spruce. Generally, a thinning or a selection cut (uneven age management) will be made on a 10 to 20-year entry cycle. Again, since the road will be needed on a periodic basis, it should be considered part of the inventoried forest road system. The diversity of expected use (internal and external), the soil texture in the area the road serves, the terrain, whether the road is closed or open to the public and the season when harvesting may be restricted to all play a part in the traffic service level of the road.

Aspen, jack pine, and balsam fir are generally managed even-aged, through clear cutting, with only one entry every 40-50 years. Access roads for any given stand should be constructed as a temporary road, re-vegetated and closed upon project completion. If the road accessing these stands continues on to access other stands that need frequent entry, the road should be part of the main system of roads. Also, in some cases, these stands are thinned as part of efforts to convert them to other types. In these cases, repeated entry would call for long-term access.

If large areas (40-250 acre blocks) were to be clear-cut under an even-aged silvicultural system, the amount of system road needed would be less than in the same size area managed under the uneven-age silvicultural system. Temporary roads could be the major access into the larger clearcut block because after harvesting and hauling were complete, the road could be decommissioned. No access for timber hauling would be needed for 40 to 60 years. At that time, new temporary access could be established. Some of the access into these larger blocks

may want to be kept for other resource or public needs. Those roads should be part of the system. Generally, clearcutting in excess of 40 acres in size is not done because of limitations in the National Forest Management Act. This issue will not be addressed in the roads analysis. If a large clearcut block would be incorporated into an alternative, the Travel Analysis can be revised.

Age class distribution in some timber types is another factor affecting road density and road classification. Aspen is managed to obtain benefits for certain game and non-game species. These benefits are best obtained by maintaining an even age class distribution throughout an area, ideally about 20% of the area in each 10-year age class. These age classes should be interspersed in 10-40 acre blocks. Even though each stand may be entered only once every 40-50 years, access may serve more than one stand. These access roads may be used fairly frequently, perhaps on a 5-15 year entry cycle, dictating that they be inventoried system roads rather than temporary roads. Areas with an emphasis on aspen management will generally need a lower density of system roads.

An important aspect of a road system and its effect on access to perform silvicultural treatments is the Traffic Service Level (TSL) of the road. A higher TSL will allow year round access for silvicultural treatments and hauling of harvested wood. A low TSL road may require only winter access into an area.

Whether a road is open or closed has little impact on the ability to perform harvest activities to meet silvicultural objectives. If the road is closed with a gate, the gate is simply opened. If the road is closed with a berm or rocks or debris, that can be moved to temporarily open the access and replaced when the activity is completed.

## **Minerals Management (MM)**

### **MM(1): How does the road system affect access to locatable, leasable, and salable minerals?**

The potential for leasable minerals (oil and gas) are very low in the project area and up to the present time there have been no permits issued for leasable minerals.

The potential for locatable minerals (i.e. hardrock) are low in the project area and up to the present time there have been no permits issued for hardrock prospecting. However, there are outstanding and reserved mineral rights in addition to federally owned mineral rights within the project area. There have been active prospecting permits issued in locations outside this project area. Reasonable access, as required by law, must be provided for any mineral exploration request associated with outstanding and reserved mineral rights.

There are known landforms that have potential future deposits of borrow and gravel within the project area that may need to be developed in the future as existing sources are depleted. To develop new sources of borrow and gravel, additional road access to these sources may be needed. There are three active and three inactive gravel pits on federal lands within the Fourmile Project Area.

## **Range Management (RM)**

### **RM(1): How does the road system affect access to range allotments?**

There are no range allotments within the Fourmile analysis area.

## **Water Production (WP)**

### **WP(1): How does the road system affect access, constructing, maintaining, monitoring, and operating water diversions, impoundments, and distribution canals or pipes?**

Of the above mentioned items, only impoundments (dams) are known to be relevant on the CNNF. Forty-seven dams on the forest are maintained by the Forest Service and there are an unknown number of dams within the CNNF boundary owned and maintained by other entities. The missions of these dams are diverse and include enhancement for fisheries, wildlife, and/or recreation; there is one Federal Energy Regulatory Commission (FERC) (power- generating) dam inside the forest boundaries; and at least one local township water reservoir.

All of the dams must be accessed via roads for operation and maintenance. Operations often include scheduled drawdowns and other such manipulation to carry out the mission of the dam. Maintenance includes removal of beaver debris and repair of other damage to prevent further damage to the dam and neighboring environments, as would happen in the event of a dam failure. All dams must be regularly accessed by Forest Service and State personnel who complete required safety inspections.

The missions of the dams usually involve road access. Recreational use in reservoir areas includes boating, fishing, camping, and hunting and all requires boat landings and/or access to trailheads and hunting areas. Fisheries personnel of the Forest Service and State of Wisconsin require access for fish monitoring and stocking, and law enforcement. Wildlife enhancement often includes vegetative manipulation of the dam and reservoir areas for waterfowl and game enhancement

### **WP(2): How does road development and use affect water quality in municipal watersheds?**

There are no water use facilities or municipal watersheds within the analysis area.

**WP(3) How does the road system affect access to hydroelectric power generation?** There are no hydroelectric projects within the analysis area.

## **Special Forest Products (SP)**

**SP(1): How does the road system affect access for collecting special forest products?** The use of forest system roads for collection of special forest products is somewhat evenly distributed over the area, but collection is usually related to a particular time of the year. For example, birch bark is collected in mid-summer, moss is collected from spring through fall, balsam boughs are collected during the fall, birch twigs and poles are collected during the winter, mushrooms may be the spring and fall, with berry picking and Native American gathering takes place mainly during the summer months.

The majority of road use related to special forest products is for personal use firewood gathering and berry picking.

As a rule, the more roads that are open and available for collecting, the easier and more economical it is for the user. Closing and decommissioning of open existing roads may be a concern to users of the National Forest who gather miscellaneous forest products.

### **Special-Use Permits (SU)**

**SU(1): how does the road system affect managing special-use permit sites (concessionaires, communications sites, utility corridors, and so on)?** There are a number of utility corridors within the Fourmile project area. This includes electric, phone, and gas line corridors. Most electric, phone and gas lines that serve residential customers are placed in existing road corridors of state, county, town, and forest service roads with a maintenance level of 3 or higher to facilitate construction and maintenance. As long as these roads remain in existence, access to most utility corridors would continue to exist.

High voltage electric lines or major gas lines do cut cross country through wooded areas. Often these main utility corridors cross main roads and the utility corridors can be accessed by driving down the cleared area of the corridor. In some instances, wetlands or other topographical features may prevent access down the corridor. In those instances, lower standard Forest roads may provide the best access to the corridor. De-commissioning of low standard Forest roads could result in limiting future access to these utility corridors. Closure of roads to public access would not likely affect access to utility corridors as permission could be granted to companies to use a closed road if needed. If roads within the Fourmile area were considered for closure or de-commissioning, the land status should be reviewed for utility corridors that may be affected.

### **General Public Transportation (GT)**

**GT(1): How does the road system connect to public roads and provide primary access to communities?**

State Highways 32 and 70 lie within the project boundary. These roads are connected to the project by several major town roads, as well as numerous other town roads that provide access to numerous cabins and within holdings. There are three smaller communities near the project area: Hiles, Eagle River, and Three Lakes. Hiles is unincorporated.

**GT(2): How does the road system connect large blocks of land in other ownership to public roads (ad hoc communities, subdivisions, inholdings and so on)?**

As stated in above in question GT(1), the road system connects several subdivisions and inholdings by major town roads. These roads are maintained by the local townships, but the Forest provides assistance for major repairs on these types of roads through cost share agreements, when the Forest budget allows.

**GT(3): How does the road system affect managing roads with shared ownership or with limited jurisdiction? (RS 2477, cost-share, prescriptive rights, FLPMA easements, FRTA easements, DOT easements)?**

The road system is greatly affected by shared ownership because many of the roads within this project, as well as the entire forest, are shared ownership. The CNNF and the local townships have worked cooperatively with cost share agreements to provide the public with a safe and effective road system.

#### **GT(4): How does the road system address the safety of road users?**

The current road system is managed in accordance with the assigned traffic service levels and maintenance levels. There is a direct correlation between traffic service levels and design standards for the facility. The highest service level roads provide for the greatest travel comfort while maintaining the highest degree for safety. As service levels diminish, design speeds and user comfort follow suit. This analysis primarily looked at lower maintenance level roads that provide local access to resource management activities. Many of these roads are constructed of native materials or an improved pit run surface. The rough nature of this type of surfacing lends to slower driving speeds and a lower potential for accidents.

#### **Administrative Use (AU)**

##### **AU(1): How does the road system affect access needed for research, inventory, and monitoring?**

The new road system may make the area more accessible for these activities.

##### **AU(2): How does the road system affect investigative or enforcement activities?**

Open Forest Service system roads, open unauthorized, open user developed, and unclosed temporary roads are all accessible to, and used by the public. These same open roads are also used for both investigative and enforcement activities. Primary use activities include driving for pleasure, timber management, hunting, fishing, blueberry picking, mountain biking, cross country skiing, snowshoeing, ATV use, and snowmobiling. While roads provide access for these activities, they also provide access for law enforcement personnel to engage in preventive and enforcement patrols. In areas where open road densities are highest, it becomes difficult to conduct thorough patrols. Many landowners access their property across the NF, many without a permit. Some hunters and squatters have permanently placed campers at the end of dead end roads and along recreational trails.

Motorized users sometimes access permanent tree stands, bait stations, blinds, and areas with motorized vehicle restrictions via ATV's and four-wheel drives on open, gated, or bermed roads. Activities such as parties and hunting camps often leave behind large amounts of garbage. These roads also provide an opportunity for individuals to collect forest products (i.e. firewood, moss, boughs, etc). Trash dumping along roadsides is also a problem in some areas.

#### **Protection (PT)**

##### **PT(1): How does the road system affect fuels management?**

Prior to the 1900's the area had a fire return interval of around 5 to 10 years. Since the early 1900's wildfires have a low occurrence in this area, but have occurred and have generally been human caused. The existing road system was adequate for access to these fires. Some of the wildlife openings have been and could continue to be maintained by fire. In addition, the Forest Service has conducted several prescribed burns throughout and adjacent to the area and the existing roads have been used as boundaries for burns. The road system has been adequate for these activities.

##### **PT(2): How does the road system affect the capacity of the Forest Service and cooperators to suppress wildfires?**

The existing fire suppression capability of the Forest is based on access by wildland fire engines. The existing drivable road network provides sufficient access for fire vehicles to respond in a timely and efficient manner to suppress wildfire as well as conduct prescribed fires. An important factor in keeping wildfires small in this project area is road access that allows a fast response to an incident. The forest MEL (most efficient level) optimal fire organization is based in part on the existing road network. Roads in this project area also function as effective fuel breaks since most wildfires in this area are mostly low to moderate intensity ground fires.

**PT(3): How does the road system affect risk to firefighters and to public safety?**

The existing roads provide safe ingress and egress for both the fire fighters and the public. The present National Forest and unauthorized road system within this analysis area provides good access for most recreation and resource management activities. Roads provide the access for fuel treatment and timber management activities, as well as access for public and private fire suppression. The primary means of fire suppression is through the use of fire engines, and our ability to keep fires small involves being able to access them quickly by the existing road network. Due to the road network, the public has easier access into forested areas; this easy access also creates the potential for more ignition sources. Another safety concern is that while working along roads, the speed and frequency of vehicles creates another hazard for firefighters to take into consideration.

**PT(4): How does the road system contribute to airborne dust emissions resulting in reduced visibility and human health concerns?**

Dust emissions are currently not a significant problem within this analysis area. Commercial and recreational traffic is generally light, but could increase due to Fourmile Lake campground being opened to ATV traffic.

**Unroaded Recreation (UR)**

**UR(1): Is there now or will there be in the future excess supply or excess demand for unroaded recreation opportunities?**

It is reasonable to expect that as the human population increases the need for unroaded recreation may rise in the future. There are currently contiguous unroaded areas within the Fourmile analysis area and there are no new proposed unroaded areas to be added as a result of the analysis. As noted on page 105 of Roads Analysis (FS-643), the appropriate scale for an analysis of unroaded recreation opportunities is at the Forest level. In accordance with this, this issue has been examined in the forest plan revision effort. Areas that are suitable for unroaded recreation opportunities have been identified and analyzed across the forest.

**UR(2): Is developing new roads into unroaded areas, decommissioning of existing roads, or changing the maintenance of existing roads causing substantial changes in the quantity, quality, or type of unroaded recreation opportunities?**

The Fourmile project does not include development of new roads in unroaded areas. There is going to be conversion of unneeded roads to trails, which will improve the quality of the unroaded recreation experience.

**UR(3): What are the adverse effects of noise and other disturbances caused by developing, using, and maintaining roads, on the quantity, quality, and type of unroaded recreation opportunities?**

There may be a short term effect on unroaded recreation while work is completed to convert existing roads to trails; however, the work, when completed, will improve the experience for those seeking unroaded recreation opportunities.

**UR(4): Who participates in unroaded recreation in the areas affected by constructing, maintaining, and decommissioning roads?**

The unroaded area currently has a network of hunter hiking trails. Individuals who participate in recreation activities off roads are primarily hunters and fishermen, but may include hikers and campers.

**UR(5): What are these participants' attachments to the area, how strong are their feelings, and are alternative opportunities and locations available?**

Decommissioning of roads or closing roads to the public may have the greatest effect, but most of the roads designated for decommissioning are not on the MVUM and are not legal to travel on with a motorized vehicle.

**Road-Related Recreation (RR)**

**RR(1): Is there now or will there be in the future excess supply or excess demand for roaded recreation opportunities?**

Roaded recreation questions have been addressed in the forest plan revision of the Chequamegon-Nicolet National Forest. It is reasonable to expect that the demands for road related recreation will increase as the population of the general area increases and the age of the overall population increases. Passenger and four-wheel drive vehicles are prevalent in the areas, and therefore, it is reasonable to assume that the road system will remain important for individuals to access the opportunities the north woods offers.

The forest plan revision addressed the issue of ATV access on the Chequamegon-Nicolet National Forest land. The plan allows for 85 miles of ATV trails and use on open roads where posted open. Currently there are town and forest roads that are designated as ATV routes in this area.

**RR(2): Is developing new roads into unroaded areas, decommissioning of existing roads, or changing maintenance of existing roads causing substantial changes in the quantity, quality, or type of roaded recreation opportunities?**

The analysis area is well roaded with numerous system roads and a number of unauthorized roads that were used for logging in the past. The MVUM identifies roads that are open to public travel and the types of uses that are authorized on individual roads.

**RR(3): What are the adverse effects of noise and other disturbances caused by constructing, using, and maintaining roads on the quantity, quality, or type of roaded recreation opportunities?**

The effects of noise and other disturbances caused by construction, usage, and maintenance, on the quantity, quality, or type of roaded recreation opportunities, is relatively low. The terrain is

relatively flat and noise does not carry very far due to the denseness of the forest. Dust is seldom much of a problem in the area, except in exceptionally dry periods. At these times, it is not a significant problem and is usually short lived, due to the humid climatic conditions.

**RR(4): Who participates in roaded recreation in the areas affected by road constructing, changes in road maintenance, or road decommissioning?**

Within the Fourmile analysis area, roaded recreation users include sightseers, hunters, fishermen, berry pickers, hikers, bicyclists, ATV users, and 4x4 vehicles. Any decrease in the availability of low standard roads would decrease the driving opportunities for these types of vehicles.

**RR(5): What are these participants' attachments to the area, how strong are their feelings, and are alternative opportunities and locations available?**

The users of the area represent a wide range of users from local hunters and firewood collectors to weekend visitors who occasionally use the roads for mountain biking or berry picking. Generally, local residents, snowmobilers, and hunters have strong feelings about maintaining open access throughout the area. Other users, who prefer to engage in "silent sports", such as mountain biking and cross-country skiing, are probably less attached to the area, but would like to have some areas closed to motorized access. Alternative opportunities for both groups exist in the forest and the flexibility to close some of the roads while maintaining opportunities for both types of users also exists.

**Passive-Use Value (PV)**

**PV(1): Do areas planned for road constructing, closure, or decommissioning have unique physical or biological characteristics, such as unique features and threatened or endangered species?**

The wood turtle, a state threatened and CNNF Regional Forest Sensitive Specie (RFSS) is found in several rivers within the project area. These turtles can be negatively impacted by road management activities that can result from fatal encounters with heavy equipment and other vehicles. Of special concerns are those activities that occur near or in rivers or creeks; however, these impacts can be minimized by implementing successful design features. Road construction conducted in winter and late fall would have the least amount of impacts because the turtles have moved from their upland habitats into rivers to hibernate. If work needs to be conducted outside these periods then a "turtle fence" can be constructed that would detour the turtles from traveling into the work area and guide them into safe areas. Road construction designs should incorporate rocky shoulders and banks (no sand) to stop turtles from using these areas as nesting sites. Any road closures or decommissioning would be beneficial for turtles as it would decrease vehicle traffic in the area and thus reduce the risk of turtles being run over by them on roads.

The project area also includes RFSS goshawks, red-shouldered hawks and eastern timber wolves. Both hawk species utilize large tracks of mature hardwood forest for nesting and foraging (see TW (1)). The forest plan protects these species active and historic nesting sites from habitat alteration and disturbance which includes road and trail management (forest plan, 2-20 and 2-21). One of the main characteristics describing quality wolf habitat is low road densities

(WDNR, 1999). The current road density and pattern of use by wolves does not appear to be affecting their colonization or success within the project. This could continue to improve as road densities will be reduced with implementation of this project and the CNNF Travel Management project.

**PV(2): Do areas planned for road construction, closure, or decommissioning have unique cultural, traditional, symbolic, sacred, spiritual, or religious significance?**

The short answer is yes, to many cultures, though detailed information can only come from a formal cultural assessment, which has been done for the Chequamegon-Nicolet National Forest (CNNF). In all likelihood, some areas planned for road construction, closure, and decommissioning may be associated with significant or potentially significant cultural resources. Again, 2,500 cultural resources have already been recorded on the CNNF land base, and many others not yet been discovered.

In the event that something of unique significance were discovered or brought to the attention of the Forest, local tribal governments would be contacted. Thorough consideration would be given and appropriate changes would be made to the analysis recommendations.

**PV(3): What, if any, groups of people (ethnic groups, subcultures, and so on) hold cultural, symbolic, spiritual, sacred, traditional, or religious values for area planned for road entry or road closure?**

See response to PV (2). Those groups that may be affected can only be determined through a comprehensive cultural assessment of the Forest's land base.

With regard to Native peoples, some clearly hold certain areas as sacred or conduct traditional cultural practices in certain areas. Understanding where these areas are located can only be determined through formal consultation with those who have historic or cultural ties to the Forest's land base. They include, but are not limited to the Menominee Tribe, various Ojibwe Bands, and the Forest County Potawatomi Tribe.

Further, through 150 years of settlement, there may be some European Americans that consider certain locations as traditional cultural properties for example, local historical societies such as the Eagle River Historical Society and the Croatian and Kentucky communities. People who live in the area and those who live here seasonally would likely have a cultural or spiritual connection to the land. There are hunters and fishermen who use the area and have for many years that would have a cultural connection to this area.

**PV(4): Will constructing, closing, or decommissioning roads substantially affect passive-use value?**

Yes. Removing roads will maintain the recreational experience of the non-motorized user, but most roads that will be closed have limited or no current motorized use.

## **Social Issues (SI)**

### **SI(1): What are people's perceived needs and values for roads? How does road management affect people's dependence on, need for, and desire for roads?**

In general, people's perceived needs depend on the uses they make of the forest and its transportation system. Two directly opposing viewpoints regarding the need for and value of roads have arisen on the CNNF. The views are to provide additional roads as open to motorized vehicles and ATV's vs. reducing the current amount of roads as open to motorized vehicles and ATV's. Historically, use of roads on the Forest has been for a variety of reasons, but primarily tied to motorized use of the roads. The primary perceived (and real) motorized uses of roads include access to private land, hunting, fishing, special products gathering, camping, and other recreational activities; recreational enjoyment derived from driving (e.g. auto-tours or ATV routes); and as an ingress and egress necessity (into and out of the Forest or geographic portion of the Forest). The perceived need and value for roads on the CNNF is much greater for those groups and individuals who use the roads on a regular basis versus those who feel a sense of ownership in National Forest land, but may never actually visit or those who live near and/or use the Forest, but don't use many of the roads.

Road management proposals (especially closures) seem to catalyze interest from the public regarding their perceived dependence upon, need for, and desire for roads.

### **SI(2): What are people's perceived needs and values for access? How does road management affect people's dependence on, need for, and desire for access?**

Due to the current publicity generated by opponents and supporters of the Travel Management Rule (36 CFR Parts 212, 251, 261, and 295) and forest plan implementation, there is a heightened awareness of the issues dealing with motorized access. Snowmobile and ATV enthusiasts, some types of hunters and gatherers, and some general recreational enthusiasts are strongly opposed to any loss of motorized access. On the other hand, silent sport enthusiasts, some other types of hunters, some other general recreational enthusiasts and many environmentalists are just as strongly opposed to any increase or even retention of existing motorized access. Historically this area has had ample motorized access. Closing large additional portions of the road and trail system would be met with both support and opposition.

### **SI(3): How does the road system affect access to paleontological, archaeological, and historical sites?**

Through 25 years of cultural resource surveys, over 2,500 archaeological and historic sites and districts (i.e., cultural, or heritage resources) have been recorded within, or immediately adjacent to the boundaries of the Chequamegon-Nicolet National Forest. These surveys, which continue on an annual basis, are done with Sections 106 and 110 of the National Historic Preservation act. Cultural resource locations are confidential and exempt from Freedom of Information Act disclosure. The locations of cultural resources are sometimes revealed for interpretative purposes. Generally, however, site locations remain confidential in an attempt to avoid vandalism or looting.

The Forest's road system improves access to cultural resource locations, and for this reason, access may in some instances be construed as an 'indirect' effect to certain cultural resources.

Conversely, the Forest's road system facilitates the monitoring and protection of cultural resources by Forest Service employees. This is taken into account during project planning. Proposed roadwork is reviewed site by site for potential heritage resource conflicts and, if conflicts exist, proposed road locations may be changed, dropped, or otherwise mitigated to avoid or minimize impacts to the site.

Design criteria could come in the form of elimination of vehicle access to known unevaluated sites especially if the site is vulnerable to uses such as dispersed camping, etc.

No paleontological sites have been recorded on the Chequamegon-Nicolet, largely due to the geologically recent nature of the Forest's landscape.

**SI(4): How does the road system affect cultural and traditional uses (such as plant gathering, and access to traditional and cultural sites) and American Indian treaty rights?**  
See PV02 and PV03

**SI(5): How are roads that constitute historic sites affected by road management?**  
Some Forest transportation features can be categorized as historic, that is, they were developed prior to the establishment of the Nicolet National Forest. They include old railroad grades abandoned in the early 20<sup>th</sup> century and logging and access roads that were constructed prior to and after the turn of the century. Most of the main arterial roads in the Fourmile project area predate the establishment of the Nicolet National Forest. The Forest has not formally designated any of these roads as cultural resources. Historic transportation features that have been improved for contemporary use have been adversely affected. This would include all of the aforementioned roads in the area. Most of the development that has affected historic transportation features, however occurred prior to that time Congress directed the Forest Service to protect these features.

**SI(6): How is community social and economic health affected by road management (for example, lifestyles, businesses, tourism industry, infrastructure maintenance)?**  
The CNNF has an existing motorized trail system that in many instances follows old road locations and is accessed by the current transportation system. Tourism, including hunting, is often associated with these motorized uses. Northern Wisconsin communities rely heavily on the economic benefits, as well as social benefits derived from this motorized recreational tourism. Wood products are also an important part of the economic health for communities and counties in and around the Forest. Transportation systems can affect the ability to economically move products from the Forest to processing locations. This includes timber products as well as other commercial collections that occur.

**SI(7): What is the perceived social and economic dependency of a community on an unroaded area versus the value of that unroaded area for its intrinsic existence and symbolic values?**

Northern Wisconsin communities appear to have low economic dependence on unroaded areas, as evidenced by low visitor traffic for wilderness, wilderness study areas, and SPNM areas. The general "mood" of the communities within and near the forest supports the present amount of wilderness, but generally does not support taking more land out of timber production by creating

wilderness study areas and more SPNM areas. Also, most of the recreation revenue generated in local communities is the result of activities that largely depend on motorized access (hunting, fishing, snowmobiling, ATV activities, and lodging).

Some local communities tend not to “value” unroaded areas as much as roaded areas. Motorized access, along with timber access and income from road taxes, are perceived as “multiple use” and preferred over unroaded areas.

**SI(8): How does road management affect wilderness attributes, including natural integrity, natural appearance, opportunities for solitude, and opportunities for primitive recreation?**

There are no wilderness areas or wilderness study areas within the Formile Analysis Area.

**SI(9): What are traditional issues of animal and plant species in the area of analysis?**

As with most of the CNNF, hunting, fishing, and trapping appear to be the primary traditional uses of animals in the Fourmile project area. Most of the hunting activity focuses on white-tailed deer, ruffed grouse, black bear, and turkey during the spring and fall. At a lesser degree, trapping for species such as beaver, otter, muskrat, and mink does occur in area streams and rivers.

**SI(10): How does road management affect people’s sense of place?**

Road management is a primary factor of the CNNF traditional “sense of place.” Ties to the land are based on the lifestyles and historical use of people that live in and near the Forest. The forest is dedicated to multiple uses of resources including timber management, big and small game hunting, trapping, fishing, and an extensive motorized (ATV and snowmobiles) and non-motorized trail system.

The Forest as a whole is moderately to heavily roaded and to some traditional users it provides a roaded “sense of place” with a strong preference to keep the amount of access about the same. There are other users of the area that find that roads interfere with their experience of the forest and wish to see little or no road development and increase road closures and decommissioning. Many low standard roads on the CNNF are closed to highway vehicles when not actively being used for a project. These road closures allow access to the National Forest while giving the area some sense of “remoteness” for those who value that experience.

**Civil Rights and Environmental Justice (CR)**

**CR(1): How does the road system, or its management, affect certain groups of people (minority, ethnic, cultural, racial, disabled, and low-income groups)?**

Although the road system and its management does not provide specific accommodations for persons with disabilities, the roads in the Fourmile analysis area are being used by all groups of people (including minority, ethnic, cultural, racial, disabled or low-income). To the best of our knowledge, the current road system and its management are not impacting the civil rights of any group.

## CHAPTER 5 DESCRIBING OPPORTUNITIES AND SETTING PRIORITIES

### Introduction

#### Identifying Management Opportunities

Each maintenance level (ML) 1 and 2 road within the analysis area was assessed for its value (high, moderate, or low) with respect to its function in:

- Providing access to private in-holdings,
- providing access to hunting, recreation and/or gathering opportunities,
- providing access for administrative purposes, including timber

Likewise, each road was evaluated for the risk (high, moderate, low, or very low) it posed to:

- water resources (aquatic/water quality);
- the spread of NNIS;
- threatened, endangered, and sensitive wildlife species;
- threatened, endangered and sensitive plant species; and
- soils
- reference areas
- Heritage sites

Road value and risk ratings (high, moderate, low, or very low) were assigned numeric equivalents (5, 3, 1, or 0, respectively). For each road, the value ratings (private access, recreation access, administrative access) were added up, to obtain a Total Value rating. Similarly, risk ratings for each road were summed to obtain a Total Risk rating. The Total Risk and Value ratings were used to sort and highlight roads with high risks and values. Each road that had a high or moderate risk, in any rating criteria, was reviewed, and road management recommendations were made to mitigate the risk to the feature. Examples of some of the management strategies are displayed below based on the value/risk rating.

#### Road Management Categories for Value/Risk Ratings

Road management categories have a different priority for road system managers and therefore include different potential management options. The categories and their associated potential management options are listed in the following section.

##### *Category 1: High Value and Low Risk: Ideal Situation*

###### Options:

- These roads are best suited for open motorized use or adding to National Forest road system.

##### *Category 2: High Value and High Risk: Priorities for Improvements*

###### Options:

- High priority for reducing potential risks.
- Higher priority for road improvement, road relocation, capital improvement program, etc.

- Potential for closure if public use is low, to reduce road and/or resource damage.

***Category 3: Low Value and High Risk: Priorities for Risk Analysis and Closure***

Options:

- High priority for decommissioning.
- Least suitable for motorized use due to risk.

***Category 4: Low Value and Low Risk: Priorities for reducing Maintenance Level***

Options:

- Moderate potential for decommissioning.
- Moderate potential for reducing maintenance level.
- Where there is a recreational demand, convert these roads to trails.
- These roads may be suitable for motorized use if public value warrants.

## Values and Risks Criteria

The protocols and available data utilized to assign values and risks to each road are described below. The complete road-by-road ratings are provided in Appendix A.

## Road Related Values

### ***Public Access Value***

The Public rating was based on any other known activity where people use roads for motorized use. This includes access for hunting, fishing, berry picking, special use permits, camping, accessing rivers or lakes and any other use that is important. Most of the ratings were done by reviewing the road layer and determining the use on each road from past recollections by district personnel most familiar with the area. Hunters use most roads at some time of year but only the most used roads were given a rating. Also roads that access campgrounds are given 3.

- Road Locations
- ID team knowledge of maintained sites
- District knowledge
- Information from the Travel Management Process and Scoping.

### ***Evaluation Criteria***

High Value (5): Road is a primary motorized access route.

Moderate Value (3): Road has an established traditional motorized use for non-developed recreation and/or gathering (hunting, boughs, birch bark, moss, berry picking, etc.).

Low Value (1): Road segment is blocked to use by motorized vehicles and only provides access for non-motorized dispersed recreation use or have been shown to have limited public use.

Very Low (0): Road has no traditional established use.

### ***Private Access Value***

The road system provides access to many different types of landowners, power lines, rock sources, communication sites, and other special use permit sites. When the road provides access to other landowners, the Forest Service is obligated to provide for reasonable access if there are no other options. Because of the need to provide and manage this access, this factor is heavily weighed.

- Road Locations
- ID team knowledge of maintained sites
- Special Use Permits

### ***Evaluation Criteria***

Very High Value (5): Primary access to private in holding and main access roads.

High Value (3): Secondary access to private in holding. Other known access exist.

Low Value (0): Not needed for private access.

### ***Administrative Access Value***

Roads with administrative value are based on the extent of Forest Service use for administrative needs which include: administrative sites, heritage sites, repeater sites, special use sites, weather stations, ecosystem management, and fire activities.

Available data used during the evaluation of this category included:

- Road Locations
- ID team knowledge of maintained sites
- Timber stand inventory

### ***Evaluation Criteria***

High Value (5): Road segment serves as the primary access to Forest Service administrative sites, heritage sites, repeater sites, weather stations, fire activities, special use sites, or ecosystem management.

Moderate Value (3): Road segment serves as an alternate access to Forest Service administrative sites, heritage sites, repeater sites, weather stations, fire activities, special use sites, or ecosystem management.

Low Value (0): Road segment does not contribute, in any way, to access to Forest Service administrative sites, heritage sites, repeater sites, weather stations, fire activities, special uses, or ecosystem management.

## Road Related Risks

### *Risk to Soils*

This risk is based on the propensity for transportation corridors to facilitate compaction rutting and erosion. The potential impacts are dependent on the type of soils and slope class.

Available data used during the evaluation of this category included:

- Road Locations
- ELTP soil types

### *Evaluation Criteria*

Low Risk (1): soil drainage class – well, somewhat excessive, excessive; and soil surface texture – fine sand, sand, loamy sand, loamy fine sand, sandy loam, gravelly sandy loam, very cobbly sandy loam, loam; and equipment use rating – slight compaction; and rutting risk – slight ; and slope class – 0-1, 0-2, 0-3, 0-4, 0-5, 0-6, 1-6, 2-6, 5-10, 6-12, 1-15, 4-15, 6-15.

Moderate Risk (3): soil drainage class – moderately well or well, and soil surface texture – fine sandy loam, very fine sandy loam, or silt loam; and equipment use rating – moderate; and compaction and rutting risk – moderate; and slope class – 0-18, 6-20, 10-20, 12-20, 15-24, 0-30, 4-30, 10-30, 15-30, 10-35, 15-35, 18-35.

High Risk (5): soil drainage class - somewhat poor, poor, or very poor; and soil surface texture – any texture; and equipment use rating – severe; and compaction and rutting risk rating – severe; and slope class – 15-45, 20-45, 4-60; and all hydric soils.

### *Risk to Reference Areas*

Reference area risk rankings were developed based on location of roads within reference areas or proximity to those areas.

Available data used during the evaluation of this category included:

- GIS Road Locations
- Reference Area Inventory

### *Evaluation Criteria*

No Risk (0): Beyond 1 mile from a MA 8.

Low Risk (1): Between a ½ mile and 1 mile from a MA 8 and no motorized use road is between the Reference Area and the road under review.

Moderate Risk (3): Within ½ mile of a MA 8 and no motorized use road is between the Reference Area and the road under review.

High Risk (5): Located within MA 8

### ***Risk to Aquatic/Water Quality***

The rating for the aquatic is based on stream road crossings, lengths of road in riparian zones and with known problem crossings. The length of roads closes to the known problem was given a rating of 3. This rating was given up to the first elevation break point that was determined from the quad layer. A rating of 2 was given to a length of road near a documented known problem but was questionable whether any water movement would directly impact the stream course.

Available data used during the evaluation of this category included:

- Road locations based on the most recent GIS layer,
- 24K Hydro layer with buffers as described above,
- WI Wetland layer,
- Topographic and soil maps, and
- Road/stream crossing inventory

### ***Evaluation Criteria***

The rating for aquatic is based on road stream crossings and the occurrence of a road in the wetland layer. This rating was revised for this analysis because it was felt most of these roads would be shorter local road access, ML 1 and 2, and this criteria would be more critical than previous analysis, and would be easier to generate.

No Risk (0): No stream crossings or wetland intersections.

High Risk (5): One or more stream crossings or any wetland intersection.

### ***Non-Native Invasive Species (NNIS) Risk***

This risk rating is based on the propensity for transportation corridors to facilitate the introduction and spread of non-native invasive plants (weeds) that may cause ecological impacts. The potential for impact is dependent on the type of weed species present and plant community of adjacent lands. In addition, roads with higher use levels tend to be at higher risk for introduction.

Available data used during the evaluation of this category included:

- Road Locations
- NNIS location inventories
- FS type of adjacent land (if known)

### ***Evaluation Criteria***

The rating for NNIS is based on the occurrence of an NNIS within 50' of a road. This rating was revised for this analysis because it was felt most of these roads would be shorter local road access, ML 1 and 2, and this criteria would be more critical than previous analysis, and would be easier to generate

No Risk (0): No NNIS within 50' of road.

High Risk (5): NNIS within 50' of road.

### ***Risk to Threatened, Endangered, and Sensitive (TES) Wildlife Species***

Many scientific studies have documented impacts of roads on wildlife, including direct mortality, habitat loss and/or reduced available habitat due to road avoidance, habitat fragmentation, edge effects, increased competition and predation from edge-associated species, population isolation, nesting and rearing disturbances, and reduced habitat effectiveness. All of these impacts can adversely affect the viability and sustainability of wildlife populations.

Available data used during the evaluation of this category included:

- Road locations and inventory.
- Known, breeding, denning, and nesting site locations.

### ***Evaluation Criteria***

Very Low Risk (0): Road is not present within ½ mile of a nesting, denning, or breeding site for TES wildlife.

Low Risk (1): Road lies within ½ mile of a nesting, denning, or breeding site for TES wildlife or within 1320 feet but a motorized road is between the occurrence and the road under review.

Moderate Risk (3): Road lies within 1320 feet of nesting, denning, or breeding site for TES wildlife or within 660 feet but a motorized road is between the occurrence and the road under review.

High Risk (5): Road lies within 660 feet of a nesting, denning, or breeding site for TES wildlife and no motorized road lies between the road and the occurrence,

### ***Risk to Threatened, Endangered, and Sensitive (TES) Plant Species***

As with wildlife many scientific studies have documented impacts of roads on TES plant life, including habitat loss and/or reduced available habitat due to habitat fragmentation, edge effects, increased competition from edge associated species, population isolation, and reduced habitat effectiveness. All of these impacts can adversely affect the viability and sustainability of TES plant populations.

Available data used during the evaluation of this category included:

- Road locations relative to known TES plant occurrences.

### ***Evaluation Criteria***

Very Low Risk (0): Road is not present within ½ mile of a documented TES plant occurrence.

Low Risk (1): Road lies within ½ mile of a documented TES plant occurrence or within 1320 feet but a motorized road is between the occurrence and the road under review.

Moderate Risk (3): Road lies within 1320 feet of a documented TES plant occurrence or within 660 feet but a motorized road is between the occurrence and the road under review.

High Risk (5): Road lies within 660 feet of a documented TES plant occurrence and no motorized road lies between the road and the occurrence,

### ***Heritage Risk***

For purpose of this analysis, ML 1 and 2 roads are considered “areas of potential effect,” and as stated in 36 CFR 800.16, “area of potential effect means the geographical area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist.” Simply stated, operation of a road through a recorded cultural resource site may likely render disturbance, that is, a direct effect. Further, operation of a road near a recorded cultural resource improves access and increases the possibility of looting or vandalism, and for this reason poses an indirect effect. Consequently, a ML 1 or ML 2 road’s distance from a recorded cultural resource is assumed to be the appropriate measure of risk factor.

Available data used during the evaluation of this category included:

- Road locations
- Known Heritage Sites

### ***Evaluation Criteria***

Very Low Risk (0): No cultural resource located within 400 meters of road.

Low Risk (1): Cultural resource located between 200 – 400 meters of road.

Moderate Risk (2): Cultural resource located between 100 – 200 meters of road

High Risk (3): Cultural resource located between 50 – 100 meters of road

Very High (4): Cultural resource located within 50 meters of road, bisected by a road, or road is a designated cultural resource.

## **Opportunities Based on Problems and Risks**

Based on the existing and desired condition for roads, key issues, the answers to questions contained in FS-643, Roads Analysis: Informing Decisions about Managing the National Forest Transportation System, and the value/Risk analysis as displayed in Chapter 7 – Road Matrix, the analysis team has developed the following sets of opportunities.

## **Road Decommissioning**

There are a total of 147.2 miles of roads to be decommissioned in the Fourmile project. Of these roads to be decommissioned, 141.1 miles are unauthorized forest roads and 6.1 miles are National Forest System roads. This means that a total of 147.2 miles will be permanently removed from the transportation system, except to track the effectiveness of the decommissioning efforts, and allowed to return to normal ecological functions. These roads have been found to have a low use value to manage the forest and some are disrupting the ecological functions of the land. Based on funding and project activities these roads may be decommissioned over a long period of time and would be prioritized according to values from the Road Issue Matrix. Decommissioning efforts may include reestablishing drainage patterns, scarifying roadbeds, planting native vegetation, recontouring back to pre-road states, or may be as little as placing an earthen berm and allowed to revegetate naturally (See Appendix A for a listing of specific roads to be decommissioned.)

## **Road Closures**

A total of 28.1 miles of National Forest System Roads are listed as currently closed. There are opportunities to close an additional 1.0 miles of system roads. These are in addition to those that have been designated for decommissioning. These roads will be removed from the MVUM and some will physically be closed. There are nine roads that access private land under Special Use Permits and should be open to the permit holder only. These roads should not be open for public access. Roads currently closed, or listed for future closures, are those which are needed for intermittent access for management activities and will be part of the National Forest road system. Refer to Appendix A- Road Matrix and Recommendations for individual road closures.

## **Adding roads to the National Forest System, reconstruction, or maintenance**

The existing NF road system within the Chequamegon/Nicolet National Forest varies from two-lane blacktop surfaced roads to single lane woods roads, likewise, having differing vehicular use from passenger car to 4 wheel drive trucks. For this analysis, generally we are considering the single lane local roads. Many of the unauthorized roads were user developed and will only accommodate light duty trucks or cars making it necessary to improve or reconstruct them. Reconstruction of these roads may include corner realignment, vertical realignment, pit run placement to stabilize soils, and culvert or other drainage structures to protect hydrologic functions. There are also NFS roads that were built in the past that have not received any maintenance since the last timber sales and need heavy maintenance to bring them back to their original design criteria. Within the Fourmile Area, 51.6 miles of unauthorized roads were determined to be “Likely Needed” under TMR subpart A (USDA FS 2015), and identified for addition to the current National Forest road system. Of these 51.6 miles, 35.8 miles were identified as being in need of reconstruction. Additionally, 10.6 miles of NFS road are designated for reconstruction.

## **Road Construction**

A total of 1.2 miles of road construction have been identified within the Fourmile analysis area over the long term for resource management. Appropriate drainage structures will be incorporated to minimize soil movement and continue hydrological functions. Upon completion

of management activities, all constructed roads will be closed to protect the investment of construction and to discourage any public use pattern.

## Trail Conversion

A total of 48.9 miles of roads have been identified within the Fourmile analysis area for trail conversion. Included in this total are 43.4 miles of unauthorized roads and 5.5 miles of National Forest System Roads that were found to be not needed for any other management activity. This action would remove the road from the INFRA road data base. It would no longer be used to calculate total or open road density figures.

## Temporary Roads

A total of 0.2 miles of temporary road construction has been identified within the Fourmile analysis area. Appropriate drainage structures will be incorporated to minimize soil movement and provide continuity to hydrological functions. Upon completion of management activities, the road will be closed to all motorized use and decommissioned, which includes reestablishing drainage patterns, scarifying roadbeds, planting native vegetation, reshaping to natural grade or placing an earthen berm and allowed to revegetate naturally.

## Road Density Management in Wolf Pack Territories

The Wisconsin Wolf Management Plan (October 27, 1999), the National Recovery Plan for the Eastern Timber Wolf (1992), and Forest-wide Standards and Guidelines direct management of wolves and their habitat. According to the Forest Plan, Chapter 2-19, the open road density or miles of roads open to public motorized use within areas where wolves have established territories, should not exceed the number of miles open to motorized public use at the time the wolves established themselves. It applies to permanent roads that receive routine maintenance and are accessible year-round by two-wheel drive vehicles (Forest Service Maintenance Level 5, 4, 3 and possibly some Level 2 roads). The road densities for Maintenance Level 3, 4, and 5 roads will not increase with this project. Densities of Maintenance Level 2 roads could decrease if the project is implemented.

**Table 5.1 - Road Densities Based on the Recommended Road System for the Fourmile Project Area Compared to Existing Densities (67.34 square miles)**

Grouped Forest Plan Road Densities	Existing Density	Recommended Density	Net Road Density Change (Existing to Recommended)	Area (square miles)
open road density of 0.0 miles/square mile (SPNM)	1.87	0.00	-1.87	3.29
total road density of 0.0 miles/square mile (SPNM)	9.04	0.16	-8.88	3.29
open road density of up to 2.0 miles/square mile	1.45	1.29	-0.16	36.01
total road density of 3.0 miles/square mile	5.57	2.86	-2.71	36.01

open road density of up to 4.0 miles/square mile	2.10	1.53	-0.57	28.04
total road density of 4.0 miles/square mile	5.40	2.91	-2.49	28.04

**Table 5.2 - Road Mileage Based on the Recommended Road System for the Fourmile Project Area Compared to Existing Mileage (67.34 square miles)**

Grouped Forest Plan Road Densities	Forest Plan Mileage*	Existing Mileage	Difference Between the Existing and Desired Forest Plan Mileage (Miles)	Recommended Mileage	Maximum increase or minimum decrease to meet desired Forest Plan Mileage (miles)
open road density of 0.0 miles/square mile (SPNM)	0.00	6.16	-6.16	0.0	0.00
total road density of 0.0 miles/square mile (SPNM)	0.00	29.78	-29.78	0.51	-0.51
open road density of up to 2.0 miles/square mile	72.02	52.28	19.74	46.28	+25.74
total road density of 3.0 miles/square mile	108.04	200.67	-92.63	103.12	+4.92
open road density of up to 4.0 miles/square mile	112.16	58.92	53.24	42.89	+69.27
total road density of 4.0 miles/square mile	112.16	151.44	-39.28	81.55	+30.61

\*Plan Mileage = Plan Density x Area

## Updates

Since this travel analysis is based on existing information and spot examination, some additional field reconnaissance may be necessary during implementation of road management activities, to determine existing physical conditions and provide information for data updates. Regardless, this travel analysis will still provide important information for future projects on the CNNF.

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## **CHAPTER 7 APPENDIX A – MATRIX**

## **APPENDIX B- MAPS**